

Work Order ID 84664

May-30-12 3:53:00 PM

Duplicate

84664

U/R

Page 1

Item ID: D350-748-141TRN

Accept

N9000040100

Setup Start *NS1*

Revision ID: ~~U/R~~

Item Name: Crosstube Turning Detail

Stop *NS2*

Start Date: 17/05/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 22/05/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: MLJ

Date: 12/05/31

Tooling:

Date:

Run Start *NR1*

QC:

Date:

SPC (Y/N):

Date:

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
D350-748-141	F U/R <u>OK 12-05-31</u>

PTO

100 0.00

100

MORI SEIKI CNC LATHE LARGE

Mori Seiki

Memo

0.00

Mori Seiki CNC Lathe Large

1-Fill tube with sand & install plugs on both ends as per Folio FA648
2-Turn first side as per Folio FA648
3- File transition lines smooth.
FOLIO REV: AE
DWG REV: E

1 0

*man L
12/09/24*

110 0.00

110

QC1- Inspect dimensions to dimension sheet

QC

Memo

0.00

Quality Control

1 0

*man L
12/09/24*

W/O: 84664		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D350-748-141TR-2 PAR #: _____ Fault Category: X-fake NCR: Yes No DQA: OK Date: 12/12/21
 Resolution: _____ Disposition: WIP - in QA: N/C Closed: OK Date: 11

NCR: 12250		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
12/9/26	100	ULTRASOUND Deviation over tolerance tol = 0.030" measured = 0.033"	DAS 12 12/9/26	Acceptable min. wall OK	DAS 12 12/9/26	TW 12-9-26	DAS 12 12/9/26	(DAS) 16 12/11/30

NOTE: Date & initial all entries

84664

Page 2

Accept

N900040100

Setup Start *NS1*

Stop *NS2*

Cust Item ID:

Start Date: 17/05/2012 **Start Qty:** 1.00

*** 1 ***

Customer:

Required Date: 22/05/2012 **Req'd Qty:** 1.00

*** 1 ***

Reference:

Run Start *NR1*

Approvals: **Process Plan:**

Date:

Tooling:

Date:

Stop *NR2*

QC:

Date:

SPC (Y/N):

Date:

**Insp.
Stamp**

0.00

120

MORI SEIKI CNC LATHE LARGE

0.00

Mori Seiki

Memo

Mori Seiki CNC Lathe Large

1-Turn second side as per Folio FA648
2- File transition lines smooth.
3-Scribe Part & Batch as per Dwg D350-748-141
FOLIO REV: MM
DWG REV: F

130

QC1- Inspect dimensions to dimension sheet

0.00

130

OC

Memo

0.00

Quality Control

140

QC8- Inspect parts - second check

0.00

140

OC

Memo

0.00

Quality Control

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____
Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 84664***84664***

Page 3

May-30-12 3:53:00 PM

Item ID: D350-748-141TRN

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N900040100Setup Start ***NS1***

Revision ID: U/R

Item Name: Crosstube Turning Detail

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Start Date: 17/05/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 22/05/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run Start ***NR1***

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

150

0.00

150

Large Fab

Crosstubes

Memo

0.00

Crosstubes

1-DRILL HOLES FOR HEAT TREAT USING DT9806(HOLES MUST BE
ALIGNED ON SAME LINE ON BOTH CUFFS)

> Rm 12-9-27

2-Grind machining marks

JW

12-9-27

160

0.00

160

Outsource process - Heat Treat

Outsource

Memo

0.00

Outsource process - Heat Treat

Issue P/O: 18083Heat Treat to min 180 KSI As per Dwg D350-748-141
(MIL-T-6736 OR AMS 2759-1C)
Sand Blast tube after Heat Treat
Possible Supplier: Vac Aero
Ensure Certificate of Conformity is attached

CL 12/10/05 ①

W/O:		WORK ORDER CHANGES					
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Work Order ID 84664***84664***

Page 4

May-30-12 3:53:00 PM

Item ID: D350-748-141TRN

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N900040100Setup Start ***NS1***

Revision ID: U/R

Item Name: Crosstube Turning Detail

Stop ***NS2***

Start Date: 17/05/2012 Start Qty: 1.00

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Cust Item ID:

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Customer:

Reference:

Approvals:

Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run Start ***NR1***

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
170	Receive & Inspect for Damage & Mat'l Certs	0.00							
170									
Packaging	Memo	0.00							
Packaging	Ensure certificate of conformaty is attached								
180	QC6- Inspect dimensions to drawing	0.00							
180									
QC	Memo	0.00							
Quality Control									
190	Packaging	0.00							
190									
Packaging	Memo	0.00							
Packaging	Identify and stock in kanban rack								
	Location: <u>16</u>								

DAS
16
9-8 12/11/31

① SD 12/12-18

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Page 5

May-30-12 3:53:00 PM

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N900040100Setup Start ***NS1***

Revision ID: U/R

Stop ***NS2***

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Start Date: 17/05/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 22/05/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____

Tooling: _____

Date: _____

Run Start ***NR1***

QC: _____ Date: _____

SPC (Y/N): _____

Date: _____

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

200

QC21- Final Inspection - Work Order Release

0.00


200

QC

Memo

0.00

Quality Control

12/12/18 

U12.12.18

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

May-30-12 3:53:05 PM

Page 1

Work Order ID: 84664

84664

Parent Item: D350-748-141TRN

D350-748-141TRN

Parent Item Name: Crosstube Turning Detail

Start Date: 17/05/2012

Required Date: 22/05/2012

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:A New Issue 08-03-06 DD verified by:ec
 IPP Rev B Removed polish 08.04.02 EC verified by : DD
 IPP Rev C Remove LPS-3 08.06.23 EC verified by DD IPP Rev C
 11.02.24 as per dwg rev.F DD verf: JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6015-125		Manufactured	No			110	Each	38.0000	1	1			
D6015-125									**				
Crosstube Material													

Location

Loc Qty

Loc Code

HALL

38

61380

4

2511

34

mm, 12/09/22

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD	Work Order: 04664
Description: Crosstube Assembly (AS350/355 High Fwd)	Part Number: D350-748-141
Inspection Dwg: D350-748-141 Rev: F	Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

Inspection Sheet	Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	2.240	+0.005/-0.000	2.242			VERN MIC	CNC-04
	2.180	+0.005/-0.000	2.182				
	2.180	+0.005/-0.000	2.184				
	2.237	+0.005/-0.000	2.241				
	2.272	+0.005/-0.000	2.276				
	2.306	+0.005/-0.000	2.310				
	2.339	+0.007/-0.000	2.346				
	2.339	+0.007/-0.000	2.346				
	0.062	+/-0.010	.062				
	4.26	+/-0.030					
	R0.063	+/-0.010	.063			R6	
	R0.50	+/-0.030	.50			R6	
SIDE B	2.240	+0.005/-0.000	2.243			MIC	CNC-04
	2.180	+0.005/-0.000	2.182				
	2.180	+0.005/-0.000	2.184				
	2.237	+0.005/-0.000	2.241				
	2.272	+0.005/-0.000	2.277				
	2.306	+0.005/-0.000	2.310				
	2.339	+0.007/-0.000	2.346				
	2.339	+0.007/-0.000	2.346				
	0.062	+/-0.010	.062				
	4.26	+/-0.030					
	R0.063	+/-0.010	.063			R6	
	R0.50	+/-0.030	.50			R6	
	110.27	+/-0.060	110.25			tape	LG-22

Measured by: JLM	Audited by: JLM	Preliminary Approval:
Date: 12/09/24	Date: 12-9-26	Date:

Rev	Date	Change	Revised by	Approved
A	06.11.09	New Issue (P/O D350-748-101)	KJ/JLM	
B	07.10.24	Dwg Rev updated	KJ/EC/DD	
C	11.01.20	Dwg Rev updated	KJ	
D	11.07.26	Tolerance revised for 2.339 dimensions	KJ	

W/O:		WORK ORDER CHANGES					
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Item	Qty -141	Part Number	Description
1	X	D350-748-141	CROSSTUBE ASSEMBLY (AS 350/355 HI FWD)
2	1	D6015-125	CROSSTUBE (OR D6017-115)
3	2	D3502-1	SUPPORT
4	2	D2856-400-710	ABRASION STRIP
5	1	AELS-1032-225	INSERT
6	1	NAS1149D0363J	WASHER (OR AN960JD10)
7	2	MS21920-20	CLAMP (PER DART SPEC. M-MS21920-20)
8	1	MS27039-1-10	SCREW

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6015-125 OR D6017-115
FINISHED LENGTH = 110.270±0.06
- 2) FINISH: MAGNETIC PARTICLE INSPECT PER DART QSI 038 4.2
CADMIUM PLATE PER AMS-QQ-P-416B, CLASS 1, TYPE II
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: DART PART NUMBER "D350-748-141" AND BATCH NUMBER ON INSIDE OF CUFF
PER DART QSI 044 6.4 (VIBRATING STYLUS)
- 7) WEIGHT: 30.45 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE, EXCEPT FOR Ø0.297 HOLE.
- 9) BLEND OUT ALL EDGES FROM MACHINING LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
NOTE: ALL HOLES ARE DRILLED AFTER BENDING.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 7 PASSES. MAXIMUM TUBE FLATTENING DUE TO
BENDING IS 6% BASED ON O.D.
- 11) HEAT TREAT TO MIN. 180 KSI PER MIL-T-6736 OR AMS 2759-1C AFTER TURNING. ACCEPTABLE TO
VERIFY TENSILE STRENGTH BY HARDNESS TEST PER ASTM E18 TO 40-45 HRC.
- 12) INSTALL D2856-400-710 ABRASION STRIPS WITH A GAP ON BOTTOM SIDE OF CROSSTUBE,
CENTERED OPPOSITE D3502-1 SUPPORT, PER QSI 035.
- 13) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE
OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES,
NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY.
CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE. WHEN DRILLING HOLES EXTREME CARE
MUST BE TAKEN AND CAREFUL DEBURRING PERFORMED TO ENSURE A CLEAN HOLE WITH NO
CRACKING/CHIPPING/GROOVES.
- 14) TORQUE CLAMPS 60 TO 80 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT
NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.
- 15) MAX TWIST AFTER BENDING: WITH XTUBE LAYED FLAT ON SURFACE, THE DIFFERENCE BETWEEN
CUFF HEIGHTS FROM THE SURFACE MAY BE NO LARGER THAN 0.25 (ZN C1-3).

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT

WITHOUT NOTICE

WORK ORDER

NO. 84664 MJS

12/05/31

UNDER REVIEW

11.07.12

RELEASED
2011-01-18

F	ADD HRC TEST OPTION (B8-1) PER PAR 09-040, ADD TWIST LIMIT (A8-1, C1-3), ADD D6015-125 OPTION (C8-1), STOCK DIM NOW MACHINED (D1-4)	CP	10.11.23
E	REVISE GENERAL NOTES; UPDATE TO CURRENT ADD STANDARDS; RELOCATED FLAG #6 PER PAR 08-046 (ZN A6-3); TOLERANCES (ZN C6-3, D1-3)	RF	09.09.30
D	MAG. PARTICLE AND CAD PLATE AS MFD.	CP	06.10.31
C	ADD CAD PLATING	CP	06.08.14
B	ADD D6017-115 & PRIME AND PAINT	CP	06.06.30
A	NEW ISSUE	CP	06.03.31
REV.	DESCRIPTION	BY	DATE
DESIGN	92		
DRAWN	92		
CHECKED	92		
MFG. APPR.	92		
APPROVED	92		
DE APPR.	92		
DATE	10.11.23		

DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWING NO. D350-748-141	REV. F SHEET 1 OF 4
TITLE CROSSTUBE (AS 350/355 HI FWD)	SCALE NTS
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Dart Aerospace Ltd

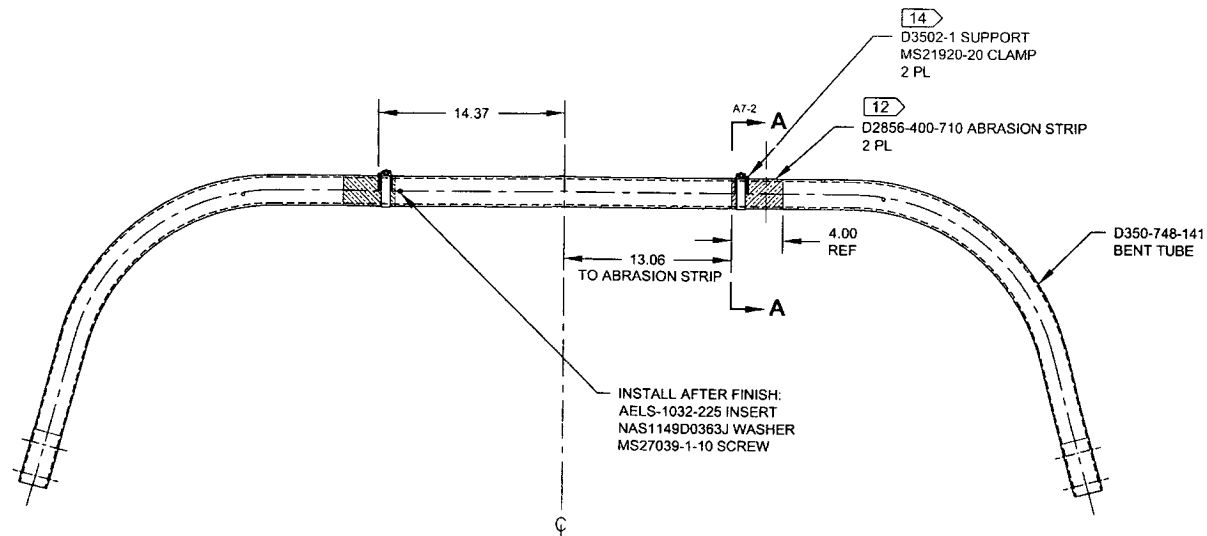
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

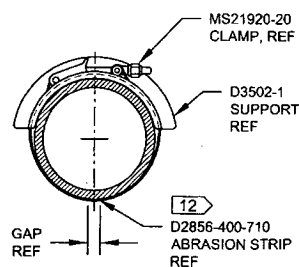
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



**D350-748-141
ASSEMBLY DETAIL**



SECTION A-A D4-2
SCALE 4X

UNDER REVIEW

11.07.11

RELEASED
2011-01-18

DESIGN	92	DART AEROSPACE LTD	
DRAWN	92	HAWKESBURY, ONTARIO, CANADA	
CHECKED	1	DRAWING NO.	REV. F
MFG. APPR.	1	D350-748-141	SHEET 2 OF 4
APPROVED	1	TITLE	SCALE
DE APPR.	1	CROSSTUBE (AS 350/355 HI FWD)	NTS
DATE	10.11.23	<small>COPYRIGHT © 2006 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

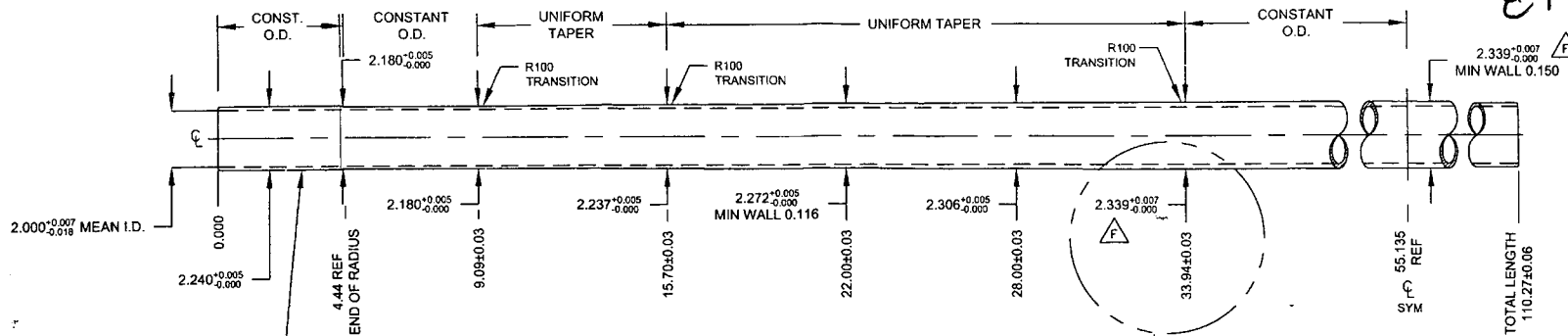
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8 7 6 5 4 3 2 1

84664

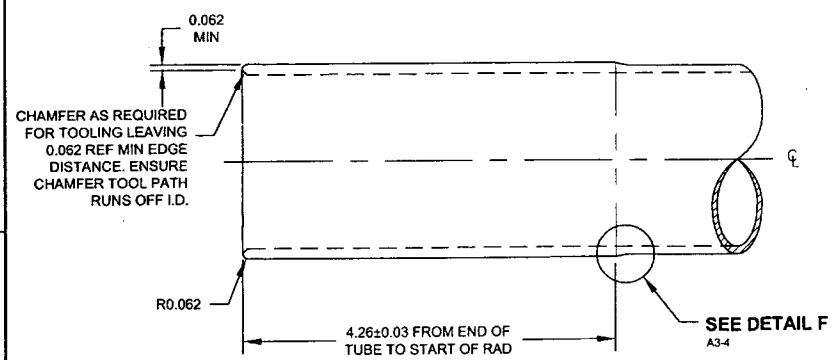


SEE DETAIL D
A6-4

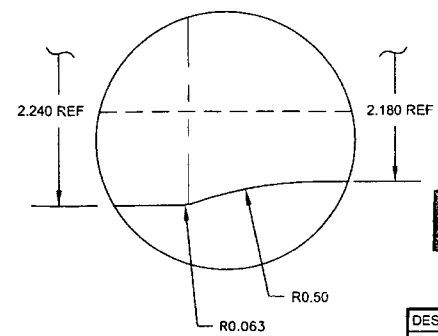
SEE DETAIL E
A1-4

UNDER REVIEW
11.07.12

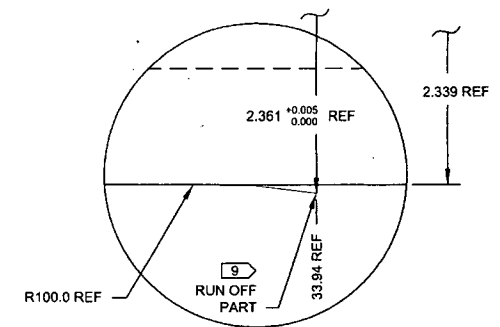
**D350-748-141TRN
TURNING DETAIL**



**DETAIL D:
CROSSTUBE CUFF** C7-4
SCALE 3X



**DETAIL F:
CUFF TRANSITION** A5-4
NOT TO SCALE



**DETAIL E:
TAPER RUN-OFF** C3-4
NOT TO SCALE

RELEASED
2011-01-18

DESIGN	qp	DART AEROSPACE LTD	
DRAWN	qp	HAWKESBURY, ONTARIO, CANADA	
CHECKED	js	DRAWING NO.	REV. F
MFG. APPR.	js	D350-748-141	SHEET 4 OF 4
APPROVED	js	TITLE	SCALE
DE APPR.	js	CROSSTUBE (AS 350/355 HI FWD)	NTS
DATE	10.11.23	COPYRIGHT © 2006 BY DART AEROSPACE LTD	
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Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

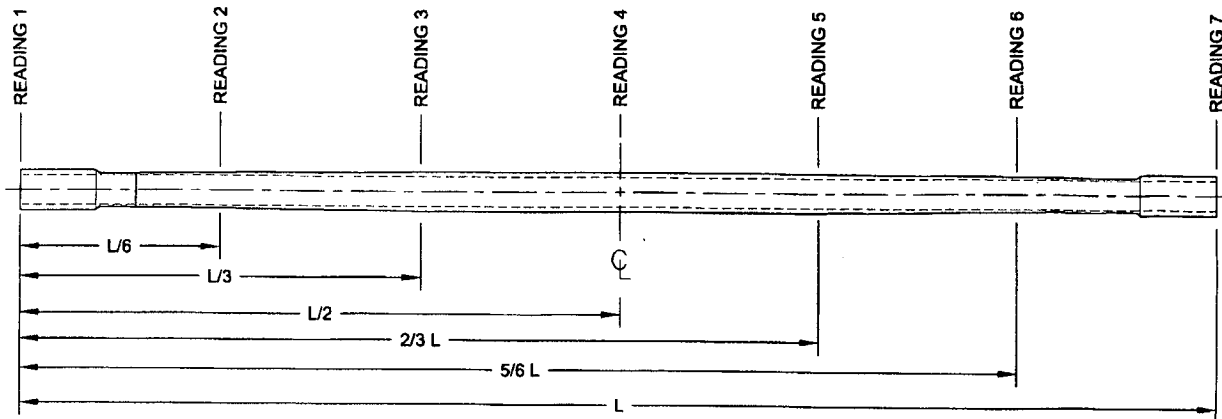
Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR: Yes No** **DQA:** _____ **Date:** _____
Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

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NOTE: Date & initial all entries

DART AEROSPACE LTD		Work Order:
Description: Crosstube Assembly (AS350/355 High Fwd)		Part Number: D350-748-141
Inspection Dwg: D350-748-141 Rev: F		Page 2 of 2

WALL THICKNESS MEASUREMENT



Location	WALL THICKNESS MEASUREMENT (IN)				Deviation Δw (max-min)	TOLERANCE
	w1	w2	w3	w4		
READING 1 L= 0"	.125	.119	.123	.132	.013	17 Dwg = 0.169 Acceptable 12/6/26 0.030"
READING 2 L= 4.18.2	.145	.131	.118	.130	.016	
READING 3 L= 7.4.37	.194	.171	.161	.184	.033	
READING 4 L= 5.5	.180	.175	.174	.181	.007	
READING 5 L= 37"	.172	.174	.183	.181	.011	
READING 6 L= 18.2	.136	.119	.123	.134	.020	
READING 7 L= CVFF	.119	.121	.128	.124	.009	

Calibration Result

Actual Block Thickness: 100-200

SITESCAN 250 Measured Thickness: 100-200

Measured by:	KC
Date:	12-9-25

Audited by:	JW
Date:	12-9-26

Preliminary Approval:	
Date:	

Rev	Date	Change	Revised by	Approved
A	06.11.09	New Issue (P/O D350-748-101)	KJ/JLM	
B	07.10.24	Dwg Rev updated	KJ/EC/DD	
C	11.01.20	Dwg Rev updated	KJ	
D	11.07.26	Tolerance revised for 2.339 dimensions	KJ	
E	12.06.04	Wall thickness form added	KJ	

B
10 E. MERMAID LANE
WYNDMOOR, PA 19038

Voice: 215-233-2600
Fax: 215-233-5653

acking List
Sales Order Number:
74295

Sales Order Date
Oct 16, 2012
Page:
1

Sold To:
DART AEROSPACE
1270 ABERDEEN STREET
HAWKESBURY, ON K6A 1K7

Ship To:
DART AEROSPACE
1270 ABERDEEN STREET
HAWKESBURY, ON K6A 1K7

Customer ID	PO Number	Payment Terms
DARA	PO18083	Net 30 Days
Ship Via	Process	
CALL CUSTOMER	HT	

Quantity	Item	Description	Total Shipped	This Shipment
16.00	EACH	E350-748-141TRN CROSSTUBE HEAT TREAT TO MIN 180 KSI (MIL-T-6736 OR AMS 2759-1C) SANDBLAST TUBE AFTER HEAT TREAT 260 POUNDS TOTAL		
1.00	CERT.			

COMMENTS

SHIPPED BY, SIGNATURE
METLAB

DATE

RECEIVED BY, SIGNATURE
DART AEROSPACE

DATE



1000 E. Mermaid La., Wyndmoor (Phila.) PA 19038-8093
Tel. (215) 233-2600 Fax (215) 233-5653

Certification

SOLD TO

Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7

November 13, 2012

Metlab Shop Order No:	74295
Purchase Order:	P018083
Description:	Crosstube
Part No.:	E350-748-141TRN
Quantity:	16 Pieces
Weight:	260 Pounds
Material:	4130 Alloy Steel
Specifications:	Heat Treat to Minimum 180 KSI (MIL-T-6736 OR AMS 2759-1C). Sandblast tube after heat treat.

This is to certify that the above parts were processed as indicated above and conform to the specification requirements.

Results:

Hardness: HRC 40-42 (180-192 ksi converted)

METLAB

Quality Representative


J.G. Conybear

MERCURY CONTAMINATION: During the heat treating process, testing and inspections, the product did not come in direct contact with mercury or any of its compounds nor with any mercury containing device.



Heat Treating and Metallurgical Consulting

D 350 X-TUBE CUFF MEASUREMENTS AFTER HEAT TREATING

	TYPE	BATCH #	SIDE A TWO READINGS	SIDE B TWO READINGS
1	AFT	90671	2.251"/2.238"	2.238"/2.243"
2	AFT	90670	2.235"/2.247"	2.236"/2.250"
3	AFT	90675	2.220"/2.261"	2.235"/2.257"
4	AFT	90672	2.239"/2.264"	2.240"/2.242"
5	AFT	90676	2.238"/2.240"	2.247"/2.254"
6	AFT	90674	2.238"/2.245"	2.242"/2.258"
7	AFT	90688	2.239"/2.251"	2.238"/2.247"
8	AFT	90677	2.242"/2.247"	2.238"/2.256"
9	AFT			
10	AFT			
11				
12	FWD	84664	2.234"/2.249"	2.209"/2.274"
13	FWD	86273	2.227"/2.261"	2.195"/2.258"
14	FWD	84665	2.239"/2.245"	2.214"/2.276"
15	FWD	84654	2.210"/2.275"	2.246"/2.249"
16	FWD	84661	2.246"/2.254"	2.193"/2.287"
17	FWD	84663	2.212"/2.272"	2.247"/2.252"
18	FWD	86272	2.266"/2.212"	2.243"/2.253"
19	FWD	84662	2.209"/2.269"	2.242"/2.254"
20	FWD			
21	FWD			
22	FWD			
23	FWD			